

Claims

- [1] A sound equipment with a film-speaker comprising:
a film-speaker unit comprising a piezoelectric film and electrodes formed on both surfaces of the piezoelectric film, wherein both surfaces of the piezoelectric film are reformed by performing a surface treatment using ions with a pre-determined energy under a vacuum state to increase an adhesive force, and the electrodes are formed by depositing conductive material on both surfaces of the piezoelectric film;
a matching transformer connected with the film-speaker unit;
an amplifier connected to the matching transformer; and
a power supply unit providing the amplifier with power.
- [2] The sound equipment as defined by claim 1, wherein the piezoelectric film is selected from a group consisting of PVDF and derivatives thereof, polymer blends including an additive such as HFP, and VDF/TrFE.
- [3] The sound equipment as defined by claim 1, wherein the surface treatment to increase an adhesive force comprises the steps of:
positioning the piezoelectric film under a vacuum state, wherein the degree of vacuum ranges from about 0.05 mTorr to about 10 mTorr; and
irradiating ions on the piezoelectric film, wherein the ions have an energy level between about 0.2 keV and about 1.5 keV and a current density of ion beam is between about 0.01 mA/cm² and about 100 mA/cm².
- [4] The sound equipment as defined by claim 3, wherein the ions are selected from a group consisting of oxygen, argon, nitrogen, hydrogen, mixtures including oxygen, argon, nitrogen or hydrogen, and other mixture gases.
- [5] The sound equipment as defined by claim 3, wherein the piezoelectric film is positioned at a distance of 1cm ~ 50cm from a ion generation point.
- [6] The sound equipment as defined by claim 1, wherein the conductive material to form the electrodes is selected from a group consisting of platinum, gold, silver, copper, chromium, nickel, aluminium, ITO, IGO, AGO, sulphur compounds, mixtures including platinum, gold, silver, copper, chromium, nickel, aluminium, ITO, IGO, AGO or sulphur compounds, and a mixture including the above-described conductive material or mixture and a specific solution or material which can increase conductivity and adhesive property.
- [7] The sound equipment as defined by claim 1, wherein the conductive material to form the electrodes is a conductive polymer material.
- [8] The sound equipment as defined by claim 7, wherein the electrodes made from the conductive polymer material further comprises a metal lead line formed on

one side of the surface of each electrode.

[9]

The sound equipment as defined by claim 1, further comprising:

a condenser positioned between the film-speaker unit and the matching transformer, the condenser filtering a low register;

a dynamic speaker installed between the amplifier and the matching transformer;
and

a coil positioned between the amplifier and the dynamic speaker, the coil filtering a high register.